August 2, 1996

J.M. Wonsik, Colonel
St. Paul District Engineer
U.S. Army Corps of Engineers
Army Corps of Engineers Centre
190 Fifth Street East
St. Paul, MN 55101

RE: Crandon Mine Project: 94-01298-IP-DLB

Dear Colonel Wonsik:

As per the June 27, 1996 meeting with Army Corps of Engineers (COE), U.S. Fish and Wildlife, U.S. Bureau of Indian Affairs, U.S. Environmental Protection Agency (EPA) and representatives from the Menominee Nation and the Great Lakes Indian Fish and Wildlife Commission, and representatives from the Mole Lake Band of Chippewas via conference phone, all parties agreed to provide the COE with comments relating to the "affected environment" portions of the applicant's (Crandon Mining Company (CMC)) Environmental Impact Report (EIR) on or around August 1, 1996. The following and the attached are comments from the EPA relating to the "affected environment" sections of the EIR but many of the comments should still be considered preliminary as other comments will be made at a later time due to the fact that major portions of the EIR are still not completed, namely the exact location of the Tailings Management Area, the groundwater model, and the solute transport model. Also, the EPA's surface water study may answer many of the concerns raised in some of the comments and will also potentially raise other concerns. So without all the information regarding what the "affected environment" will be due to the installation of the proposed mine, it is difficult to comment on all the aspects of the EIR. For that reason, only limited comments are raised regarding the affected environment at this time. Some of the following or attached EPA comments on the EIR or the Mine Permit Application (MPA) may have been made by others in the past, but since neither the EIR nor the MPA have been revised to reflect those comments, it is difficult to determine what comments have been made in the past and what the applicant's response was, so the comments are raised again.

The COE is encouraged to forward all the comments and concerns to CMC for response and for possible additional data gathering activities by CMC, and COE is also encouraged to insist that CMC revise the pertinent portions of the EIR to better enable the Wisconsin Department of Natural Resources (WDNR) and COE to prepare the state and federal Environmental Impact Statements (EISs) respectively. The following and attached EPA comments are worded such that the EIR will be revised and that the data is needed for the state and federal EISs.

Comments are not provided at this time on individual permit applications, such as for the High Capacity Well Permit Application, Clean Water Act Section 404 Permit, Wetland Regulatory Permit Application: Wetland Compensation Site, etc., as comments will be forthcoming. Also other comments from other reviewers within EPA may be received after the submittal of the following and attached comments, and these will be forwarded to you when available. In

addition, comments previously submitted to COE regarding the Tailings Management Area Feasibility Study contain several concerns regarding the "affected environment", so these comments are now again submitted since EPA has seen very limited response to these comments by the applicant.

General MPA/EIR Comments:

Many sections within the MPA and the EIR need to be updated to reflect new data and to reflect comments and decisions made at the many meetings and documented in correspondences over the last two years. Many of the below comments are made based on the text found in the MPA and the volumes of the EIR and not on any changes/updates that may have been made in separate correspondence. For this reason and for reasons apparent by the below and attached comments, redrafts/updates of the MPA and the majority of the EIR should be requested of the applicant by COE and/or the WDNR prior to the finalization of any state or federal EIS stage. Another aspect that would make the review of documents such as the MPA and the EIR easier and one that CMC should produce would be develop, in addition to the MPA index covering the WDNR Codes, is a topical cross reference index, for instance if one wanted to find out about effects regarding socioeconomics, all sections of the MPA and EIR would be listed. With an index like this, regulatory review would be more efficient and public use of the document would be more "user friendly". As is, more comments may still be forthcoming because of missed sections or comments may be made that are answered in other sections not reviewed by a particular reviewer.
Also, of great concern is the lack of analysis of cumulative effects of not only how certain aspects of this project may combine with other aspects of this project, (such as how the drawdown of groundwater may effect local wetlands and other water bodies, and this in effect may affect areas outside of the study area farther downstream or downgradient), but also how if this mine is permitted, how will effects caused by this project be compounded by effects caused by other mine explorations and potentially other mining projects. Once these new mines are located throughout the state, will ore smelters also be developed in the state so that the transportation of the ore is minimized causing a potential increase in environmental impacts? All reasonably foreseeable effects must be evaluated in the EIR/EIS (40C.F.R. 1508.8). For example, will the applicant use the smelter in White Pine, MI (the Copper Range Company is reportedly planning on constructing a new smelter with 50% increased capacity by the year 2000)? Will a mining permit for CMC make the likelihood that this smelter in White Pine will be constructed and if so, the environmental and other impacts of Copper Range's new smelter are reasonably foreseeable indirect effects of this project and must be addressed. At the June 27, 1996 meeting, I gave your staff several copies of an EPA document entitled, "Tribes at Risk: The Wisconsin Tribes Comparative Risk Project, Final Report 1992", which can assist the applicant in revising the EIR and assist in preparing the state and federal EISs.

Earlier, EPA supplied to all parties involved in the EIR, a copy of the Council of Environmental Quality (CEQ) document entitled, "Draft Guidance for Addressing Environmental Justice under the National Environmental Policy Act", and encourages all parties to follow the guidelines with regard to addressing environmental justice concerns in the EIR and state and federal EISs. The document highlights the concerns and how to address concerns related to American Indian populations and Indian Tribes. The EPA is also soon to release a similar document that I will send to all parties when it is available. The applicant's EIR is completely void of directly addressing environmental justice issues and should be revised to address this issue with a separate section devoted to it as should the subsequent state and federal EISs.

Also, overall, the discussions regarding quality assurance/quality control are lacking in the sections in which data is presented. If this information exists, the EIR sections should refer to

where it exists, and perhaps, the applicant should provide one single report detailing the quality control/quality assurance aspects for all data gathered for the EIR. In a related matter, all data regarding waste characterization (TMA, mine backfill, on-site chemicals, water treatment plant, etc.) should be condensed into one volume instead of being spread out over several volumes of the EIR and in addendums. Details should be given of all waste streams, anticipated on-site concentrations, eventual disposition of the wastes, hazards associated with the wastes, etc.

An additional issue that EPA is continuing to pursue is in regards to the interbasin transfer of water from the Lake Michigan Basin (Great Lakes Basin) to the Mississippi River Basin. The applicant is proposing to divert nearly 1 million gallons per day EPA presently is in support of the opinion that the Water Resources Development Act of 1986 (WRDA'86), 42 U.S.C. §1962d-20: Prohibition on Great Lakes Diversion, applies to the proposed mine groundwater discharge, via 38 mile pipeline, to the Wisconsin River and is more stringent that the Wisconsin Statutes, which mirror the Great Lakes Charter. According to WRDA'86, for any diversion (does not specify surface or groundwater), approval must be sought from each of the Great Lake States' Governors. The Wisconsin statutes and the Great Lakes Charter only have this requirement for volumes of diversion over 5 million gallons/day and not for <u>any</u> diversion as specified by WRDA'86. I have contacted individuals at the Great Lakes Commission and at the Council of Great Lakes Governors, amongst others in other agencies and they are presently reviewing the intent of WRDA'86 and its applicability in this project. I will keep you updated on the findings of these inquires. EPA, however, does encourage COE and the WDNR to also fully review the implications of this requirement prior to proceeding with associated permits.

<u>Mining Permit Application:</u>

Section 2.3, Approval and Exemption Request:
Page 18: Further justification and proof of need should be given for the requested exemptions

listed in this section, especially for the exemption regarding deleting several parameters from the baseline monitoring of the TMA groundwater.

Section 2.4: Mining Bond:
Page 29: In addition to the 4 (a-d) statements listed here, CMC, Exxon and Rio Algom should provide lists of similar operations in which they were involved in world-wide and the environmental records of those operations over the last 25 years. This may not be required by law, but public interests seem to be dictating the need.

Section 3: Financial Responsibility:
Page 33: One of EPA's prime concerns with regard to financial liability is the scenario that if Exxon Corporation, a U.S. Corporation, sells their interest and liability to a less viable mining interest or to a mining interest that is not a U.S. Corporation, and if environmental problems arise, what is the guarantee that U.S. or Wisconsin taxpayers would not be the ones picking up the tab for the cleanup bill? Will both, Exxon and Rio Algom remain liable even after one or the other sells its interests? If the mine is eventually only owned by a foreign interest, what mechanisms does the State of Wisconsin have to pursue cleanup costs? Section 5.4 of the MPA eludes to the fact that there very well may be different owners of the mine site when all is completed. (Section 5.4, Final Land Use, last sentence of the second paragraph states, "General use of the reclaimed areas for the proposed final land uses will be at the discretion of the owner at the time of issuance by the WDNR of a certificate of completion for the reclamation plan.") If

CMC goes bankrupt or ceases to exist for whatever reason, will all liabilities and local maintenance be covered by the two parent organizations? Will Exxon/Rio Algom always keep a local office in the Crandon area so that they remain accessible (within Wisconsin) throughout time? Is a trust fund to be established which guarantees that the mine site will actually be reclaimed regardless of site ownership?

Also of concern to the EPA is how will Exxon/Rio Algom perceive environmental damage that is need of financial compensation? The EIR does not adequately address Indian Trust resources so if a claim is made by one or all of the local Tribal populations regarding loss of certain Trust resources, will payments be readily made, or will years of court challenges be possible. Also, environmental damage caused by unintentional spills or long-term releases from tailings areas (see Report entitled "Human Health and Environmental Damages from Mining and Mineral Processing Wastes" by EPA-OSW dated December 1995), tribal trust resources could be potentially lost for many years for which there is no financial value assessable on such a loss. How will compensation or financial responsibility handle such an issue?

This section needs to be largely expanded to spell out, and not simply refer to Wisconsin statutes that may have loop-holes or which may change over the years; The MPA should explicitly state exactly what the applicant's financial responsibility is and what it is willing to do in <u>all</u> situations.

Section 4.5: Geological/Geotechnical and Waste Characterization Investigations:
Page 38: the 4th sentence of the 2nd full paragraph on this page states, "When required, normal Portland cement (NPC) will be added to coarse tailings before they are placed in the stopes." "When required" needs to be explained.

Section 4.8.8.3: Backfill Preparation Facility:
Page 61: A list of four qualities regarding qualities in which mill tailings should possess to be a mine backfill product is in this section. Should not one of the qualities be that the backfill should be a Type I waste rock or one of low leaching ability?

Section 4.8.9.1.3: Recycling Plan:
Page 64: Last paragraph states that the recycling facility will be constructed with a composite liner. No mention is made of where the drainage from this area will go.

Section 4.8.10.1.5: Miscellaneous Wastewater:
Page 73/74: This section states that the wastewater generated in the shops throughout the site will include small amounts of grease and oil, solvents, metal shavings, other particulate materials and wash water. This wastewater will be passed through traps or oil/water separators. How will the solvents be handled? It does not take a large quantity of solvent to contaminate an aquifer or water supply. This needs to be addressed further.

Section 4.11: Preblast Survey:
Page 128: How was .85 miles selected for blast effects? The equation is straight forward enough, but how was the equation derived? Does it take into account soil types, nearness of lake beds, etc.? Preblast survey should also include environmental effects such as determining how the blasts may interrupt mating seasons of eagles, herons, osprey, etc., in the mine area, or may drive out birds or insects needed for pollination of vegetation that may in turn be culturally sensitive.

Section 4.13.1: Risk Assessment Introduction:
Page 139: This section does not deal with any cumulative risk factors such as if other mines were to open in northern Wisconsin or how risks associated with the project may be higher for certain populations such as Native Americans due to their reliance on subsistence foods or other factors, (please refer to the EPA document entitled "Tribes at Risk" which was referenced above.) These factors must be included in any risk summary for this project here in the EIR as well as in the state and federal EISs.

Page 141: Table 4-17 should include a column for quantities of these chemicals on-site at any one time. List should include fuel, oil, grease, solvents etc. that were highlighted earlier in the MPA.
Are any of these chemicals listed as incompatible with other chemicals on the list? If so, how will they be handled?

Does this section take into account natural disasters such as tornados, 100 year flood or long periods of time of sub-zero temperature, that may make releases, especially with the bulk storage containers, much more likely and change Class III estimations to Class II and Class II to Class I?

Section 5.6.1.2: Mine Closure:
Page 193: For what reason is any equipment left underground? Will any environmental impacts result from such equipment being left in place below ground?

Page 194: The revised paragraphs are regarding the mine after reflooding and state that it would take 2000 years for the first particle to reach the 1200 foot compliance boundary via releases to the till. It mentions nothing of releases laterally within the bedrock or seepage that would travel down out of the mine. Will blasting fracture the bedrock and actually increase the local flow rates? If nearly a million gallons of groundwater is anticipated to be pumped out of the mine daily, then the flow rate within the bedrock must be somewhat transmissive. Why is it assumed that solute transport will move from the backfilled mine upward through the crown pillar rock and massive saprolite and then to the compliance boundary as stated in the first bullet? Has it been decided definitely that the applicant will not produce a solute transport model for the reflooded mine? A model needs to be produced showing all possible flow paths out of the flooded mine. Also, according to the WDNR's latest Status Report, dated July 1996, a compliance boundary of less than 1200 feet could be established.

Throughout Section 5, there are a number of subsections entitled "Cessation of Long-Term Care (Year 75). Are these numbers simply for cost estimations or will all long-term be discontinued after 75 years? These sections need to reaffirm the perpetual care that is promised within the financial liability section of the MPA and by State law.

Section 6.2: Site Water Flows:
Page 229: The bullets beneath "Water flows out of the site", should include water seepage out of the excavation and not intercepted by mine pumps, especially after the lower stopes are backfilled.

Section 7.1.1.1: Regional Groundwater Level Monitoring:
Page 233: The 1st paragraph states that the objective in selecting wells for monitoring the regional water table changes was to cover an area that extends roughly three miles radially from the mine. The 2nd paragraph refers to Figure 7-1 stating that the wells to be monitored are shown. Figure 7-1 does not cover an area of 3 mile radius around the ore body and also seems to be lacking sufficient monitoring points to the southwest, west, and northwest of the ore body.

What provisions are made if other monitoring wells are needed as the project proceeds, to not only monitor water levels but to evaluate groundwater quality?

Section 7.1.4.2: TMA: Groundwater Monitoring:
Page 241: Appropriate wells for QA/QC sampling will also need to be identified in addition to the wells listed in Table 7-2. Regarding the parameters being tested, according to the last paragraph on Page 241, organic compounds will not be tested for to characterize the TMA background groundwater quality. A full parameter (with no exclusions and including radioactivity, and organics) background sample would only benefit the applicant in knowing what all the conditions are prior to TMA construction. Were there any incidents of petroleum spillage during the well drilling in the area? Background sampling such as proposed in this section is needed so that if the parameter shows up sometime in the future, then it could be assumed it came from the site activities, while if it was present prior to site activities, then other sources or naturally occurring material may be present. So a full scan of parameters should be sampled for and also, this section needs to discuss or refer to where detection limits and QA/QC provisions are further discussed.

Section 7.1.4.3: Plant Site Groundwater Monitoring:
Page 244: Frequency for VOC sampling seems sufficient but this section should state what VOCs are to be sampled for and what are the detection limits.

Section 7.3: TMA Leachate:
Page 244: The TMA leachate should be analyzed for the VOCs as well as all the metals previously listed. After a several sampling rounds, the parameter list can be petitioned to be cut down. Also, since the applicant has refused to take TCLP samples of the tailings, full VOC scan and inorganic scan should be conducted on the leachate.

Sections 7.4.1 and 7.4.2: Surface Water Quality; Lakes Levels and Stream Flows:
Pages 246 and 247: Lakes need to be sampled at the same times as creeks and stream and all water levels need to be taken at the same time as all of the groundwater level measurements to assure more time-related data than has been supplied in the past.

Section 7.5: Terrestrial Ecology:
Page 248: The EIR and subsequent state and federal EISs must look at aspects besides vegetational stress when investigating the effects on the terrestrial ecology while the Crandon project is in operation. Effects on terrestrial wildlife may or may not necessarily coincide with vegetative stress. Effects on bird migration, eagle nestings, deer population, etc., need to be looked at in addition to vegetation stress. Also, the EIR does not mention what the stress on the local terrestrial populations due to the construction of the site, including the clearing of 500 acres of presently wooded and wetland areas.

Section 7.6: Wetlands:
Page 248/249: Due to potential drawdown effects beyond the project area, wetlands besides those potentially affected by the TMA need to be covered in the EIR and subsequent state and federal EISs, not just the three identified in this section. The coverage for wetland monitoring program

should cover at least the 3 mile radius. Wetlands away from the project area need to be monitored as a means of evaluating the effects of change of drainage patterns caused by the TMA and by the dewatering of the mine area.

Section 7.7.1: Air Sampling Locations:
Page 250: For a site this large, two high-volume TSP ambient air monitors and two PM10 monitors is not sufficient. This section states that Significant population area, predominant wind directions, and potential sensitive receptors were considered in the site selection process. There are significant population areas to the west (Mole Lake Reservation), north (Crandon) and east (Forest County Potawatomi) so on that basis alone, there should be at least three monitors. Monitors should not only be located close to the site as proposed but should also be where the receptors are, meaning that each of these three population centers should be monitored. Also, is the deposition of mercury a concern with the ore processing on-site? If so, mercury sampling needs to be conducted at distances away from the source. (More comments will be forthcoming regarding the air modeling and air permit application at a later date.)

Section 7.7.2: Operating Schedule:
Page 251: Again, only 2 monitoring points that will operate only every 6 days, is not sufficient. The likelihood that the sampling conditions, ie., wind direction, moisture levels, etc., would be perfect on these sampling days at these locations seems small. More locations are needed to compensate for the variable winds, but not all would be needed to be monitored daily, but based on predominant wind for the day, one upwind and several downwind samples should be taken.

Section 8: Contingency Plan:
Page 254: This section states, "As described in Sections 4 and 5 of the EIR, it is not possible to predict if the estimated groundwater drawdown under the Swamp Creek Cedars for either the best engineering judgement or practical worst case scenario will result in significant impacts to this wetland system. Also, any potential effects may not occur until after the groundwater drawdown has reached steady-state conditions." This statement opens up questions relating to the whole groundwater drawdown issue, that effects of the drawdown, no matter how much modeling occurs, won't be known until the effects are already realized. Does this kind of statement made here apply to other areas besides Swamp Creek Cedars (wetland 01) such as Rice Lake, Deep Hole Lake, Little Sand Lake?

Sections 8.1 & 8.1.1: TMA Contingency Plan & Groundwater:
Pages 255-257: If groundwater corrective action were required, as being planned in these sections, where would the treated groundwater be discharged? Any groundwater corrective action treatment and discharge could have the potential to be treating 100,000's gallons per day or more, and also has the potential of lasting for many years, therefore requiring the on-site water treatment plant to remain indefinitely and possible discharge to the Wisconsin River (or alternate receiving body) to remain intact long after the mining is completed.

Section 8.2: Private Wells, Swamp Creek Cedars, Hoffman Springs/Hoffman Creek and Creek 12-9:
Page 257: This section needs to be expanded to include any water supply, including community wells such as found on the Mole Lake Reservation, and include any water body, such as Swamp Creek and Rice Lake. A contingency plan has to make plans for all conceivable effects of the project and even though the applicant's groundwater drawdown model does not presently show effects to any but a few of the more local water bodies and private wells, plans need to be ready to cover areas of public concern.

Section 8.2.1: Private Wells:
Page 257: This section needs to list the options available to private home owners to guarantee same or better quality of drinking water, i.e., deeper wells, a community service, bottled water, etc.

Section 8.2.2: Swamp Creek Cedars:
Page 258-259: Throughout this section and to a lesser degree in Section 8.2.3., a concern over how the applicant will determine the cause of noticed effects on these water bodies. For example, in Step 1 of this section, it mentions that an evaluation of the area for other potential natural occurrences such as beaver activity that may have resulted in the observed change. Step 3 states that the applicant will determine if the results do not indicate a cause for the occurrence other than the project, they will determine the significance of the occurrence and its potential impact on the environment. Causes for the "occurrence" may not be directly caused by the project but may indirectly be caused by the project. For example, due to lower wetland water levels due to possible groundwater drawdown, beaver activity may increase to secure ponded areas for the beavers, which in turn may change other areas of the wetlands. Are these other changes in the wetlands caused by beaver activity or by the project? Would the applicant initiate corrective action? Indirect effects must be considered by the applicant and should be mentioned in these sections.

Section 8.2.3: Hoffman Springs/Hoffman Creek and Creek 12-9:
Page 259-261: The last paragraph of this section states that no treatment of the supplemental source of water to the spring or creek would be necessary. This statement may be false and testing may be necessary to assure that the supplemented water is compatible to the spring/creek in terms of pH, temperature, turbidity, nutrient load, etc. as would the water that would have naturally fed these areas.

Section 9: Emergency Notification Procedures:
Page 262: For a major environmental or fuel spill or release to the environment, the appropriate U.S. EPA contact and phone number is as follows: National Response Center at 1-800-424-8802. Please replace the number presently in the text and in all other records with the National Response Center and number.

Section 10.1.1: Inspections:
Page 263: The applicant states that semi-annual inspections for the plant site and the TMA will be conducted during the first four years following reclamation and then annually after that. This does not seem appropriate, especially for the TMA, since the maintenance of the TMA cover is one of the most important aspects of minimizing the generation of acid mine drainage. At a minimum, quarterly inspections, with special inspections after major storm events, should be maintained for at least ten years then switching perhaps to semi-annually in perpetuity.

Section 10.1.3: Groundwater Monitoring:
Page 266: The time frame for groundwater monitoring well abandonment around the plant site should continue for a longer period of time, ie 10 years, after the tear down of the plant to assure complete plant site clean-up.

Section 10.1.3.1: Regional Groundwater Level Monitoring:
Page 267: This concern is not addressed within the EIR but has to do in general with groundwater drawdown. Will there be any change in water quality for the areas in which groundwater drawdown has occurred? For instance, if a resident has a drinking water well that had a water level drop of say eight feet, then once the water levels recover overtime after the mine closes, areas in the temporarily unsaturated zone will become saturated again. Then if that same resident uses the old well again, will it have the same water quality? Will any chemical reactions occur due to oxidation or other processes to the water within the resaturated areas during the years that these zones were dewatered? Is it assumed that once the water levels go back to the original or near original levels 40-50 years after the mine operations begin, that not

only water levels but water quality will also be as it once was? Also, will County and Tribal Zoning Commissions in charge of permitting septic fields, underground storage tanks such as for gas stations, building foundations, etc. in the area, be made aware that water levels will rise again 15 years after the mine closure and may effect the placement/depth of these concerns?

Section 10.1.3.2: TMA Groundwater Quality Monitoring:
Page 267-269: The parameter list needs to be kept open and flexible and definitely not limited to the parameters listed within this section. The long-term monitoring parameters will depend on the history of sampling during the operation of the TMA such as leachate sampling results and also include parameters of concern such as chromium and pH (See attached memo from John V. Morris, EPA Chemist, dated July 26, 1996). Also, the list of wells within Table 10-2 are only proposed and the actual list will need to be agreed upon at the time of action.

Section 10.1.3.3: Reflooded Mine Groundwater Quality Monitoring:
Page 269: The applicant states that after 5 years of monitoring, they will request a reduction in the already minimally proposed parameters. EPA advises that since the reflooded mine is a likely future source of groundwater contamination and that more than 5 years may be needed to realize this, that the parameter list not only not be reduced, but should be expanded to include all parameters of concern and that the frequency remain at quarterly. On Page 194, Section 5.6.12 of the MPA, it states that an individual particle may take up to 2000 years to travel 1200 feet to the compliance boundary, which seems like an overly high estimate, but to reduce monitoring after only 5 years does not seem to cover the potential concerns regarding the reflooded mine.

Section 10.1.5: Surface Water:
Page 269: Surface water quality and stream flows/water levels should all be taken on the same schedule as are the groundwater levels/samples. Also, the plan should not be limited to the surface water bodies listed in Table 10-3 but needs to include other wetlands/streams/lakes that may have been shown to be effected during the life of the mine.

Section 10.1.6: Terrestrial Ecology:
Page 270: Aerial photos should continue for at least the 15 years that it is expected for the local groundwater levels to stabilize and then a few years after that for the vegetation to fully re-establish.

Section 10.2: Post Long-Term Care Responsibility Party:
Page 271: This section mentions the perpetual responsibility for the TMA, but not for other areas of the project such as the reflooded mine. If other areas are to be covered by this section, then the applicant should mention such instead of leaving things up for interpretation at a later date.

<u>Volume 1: Report Narrative:</u>

General: Many sections of this report need to be updated to reflect responses to past comments since this Volume was submitted in May of 1995 with only portions revised in October 1995. Sections still need to have cross references as to where the current data can be found. The Volumes of the EIR Report need a cross reference index to enable the reviewer/reader to more efficiently proceed through the documents. Also, many of the more technical or in-depth comments relating to topics within Volume 1 may be found in the attached topic specific comment memos, including socioeconomics, radiological concerns, and surface water concerns.

Executive Summary:

Groundwater Quality: Page x: This section states that groundwater will always meet WDNR

quality standards at a compliance boundary 1,200 feet from the cells. According to the latest WDNR Status Report, dated July 1996, "While the maximum compliance boundary is 1200 feet, it could be proposed for a shorter distance if necessary to protect existing and future groundwater users." It continues to state that groundwater standards for the expected contaminants from the mining project would be the maximum contaminant levels contained in state and federal drinking water standards unless a more stringent standard is necessary to protect public health, safety and welfare. EPA insists that the EIR and the EIS (both state and federal) look into how Mole Lake Reservation's water quality standards compare to state and federal standards and to determine if a less than maximum (less than 1200 foot) compliance boundary would be warranted to protect the Tribe's water resources, such as Swamp Creek and other treaty areas.

Page vi: Surface Water/Bottom Sediments: 3rd paragraph of this section states that, "Within the study area, there is a close relationship between the groundwater from the main area aquifer and the surface water in the streams and drainage lakes. This is indicated by similarities in surface and groundwater chemistry." The next part of the paragraph goes on to state, "The study area seepage lakes for the most part are isolated from the groundwater and therefore reflect surface runoff which contains softer water of lower pH." What streams and drainage lakes is the first part relating to and if this is the case, then why wouldn't the 600 gallons/minute being extracted from the mine (page ix) significantly affect these water bodies? These statements seem to contradict each other and clarification is needed.

Page ix: Cultural Resource sections throughout the EIR and in the subsequent state and federal EIS's must contain language reflecting the treaty rights of the potentially affected Native Americans within Northern Wisconsin and how all aspects of this proposed mine affect those treaty rights.

Page xii: Aquatic Biology: This section briefly states that the flow reductions in Hoffman Creek and Hoffman Springs could affect small populations of brook trout and some potential brook trout spawning areas. Are these brook trout classified as a tribal cultural resource as needed for subsistence? Section 8.2.3 of the MPA covers the contingency plan if remedial action is needed for these water bodies. Step 4 of the contingency plan states that, "If similar results occur from the resampling or remonitoring, or if a change in biota has occurred or is occurring, determine the significance of the results and their potential impact on the creek." Impacts beyond the creek also need to be evaluated as small changes to this ecosystem may have larger impacts downstream and/or on the areas' entire food chain.

Section 2-1: Site Location:
Page 2-2: This section states that the project area is two miles east of the Mole Lake Reservation and STH 55. The report should state approximately 2 miles or give the accurate mileage which according to Figure 2-1 is about 1 1/4 miles. Also, the project area, using Figures 2-1 and 2-2 is more on the order of 3 ½ miles south of the City of Crandon, not 5 as mentioned in this section. Also need to mention that portions of the Forest County Potawatomi Reservation is about four miles to the northeast of the project area.

Section 2.3.1: Mine Development:
Page 2-3: Is the applicant contemplating the use of solution mining methods after conventional mining has been completed, similar to that presently being initiated at the Copper Range site in Michigan? Will the applicant and its successors in interest commit to forever refrain from solution mining? If, solution mining is at all even contemplated or is a possibility, the EIR and subsequent state and federal EISs must look into this issue and the impacts on the environment that this method of mining would have as a cumulative effect of the present proposal.

Section 2.3.2: Mine Operations:
Page 2-4, 2-5: This section, 3rd paragraph, should cross reference the Crown Pillar Report. EPA will have comments on the Crown Pillar Report at a later date.

Section 2.4.3: Preproduction Ore/Waste Rock Storage Areas:
Page 2-8: This section should explain or cross reference where to find information on how Type I and Type II rock will be determined and state that if there is no agreed upon method or if there is uncertainty, then all rock will determined to be Type II, as discussed during the TMA meetings.

Section 2.4.4: TMA
Page 2-9: This section relates to how the TMA has been designed to provide long-term, environmentally-safe containment, but no such section (within 2.4: Infrastructure) is given to highlight the mine backfilling operation and what measures are to be taken to provide similar long-term environmentally-safe containment.

Section 2.4.7: Utilities:
Page 2-11: Is the power still to be supplied by Wisconsin Public Service Corporation? Rumors were heard that a different source of electric power would need to be found for the project. Will any electrical equipment or other machinery on-site have any PCB laden oils contained within?

Section 2.4.10: Wetland Mitigation:
Page 2-12: This brief section states that 29.5 acres of wetlands will either be excavated or filled. Does this 29.5 acres include wetlands that may be affected indirectly such as due to groundwater drawdown? Are wetlands that are "temporarily" disturbed exempt from being mitigated? Also, as most likely to be pointed out in comments made by the Tribes, and made by EPA in an attached comment (See comment from Carolyn Bury), has the applicant looked into replacing wetlands with respect to values and functions or just a ratio of acre for acre. Also, loss of wetlands value/function from one Tribal treaty area to another needs to be looked as highlighted to the COE in a comment by Mole Lake representatives during the June 26th meeting in St. Paul. Are any of the 29.5 acres of destroyed wetlands feeding into other waters of the United States so that not only will the function of the wetland be lost, but so will its contribution to the related water body(ies)? Do any of these wetlands constitute spawning grounds for fish or wildlife? Are any of these wetlands necessary for or important to the continued viability of area wild rice beds? Is a function of the wetlands to be destroyed to serve as a breeding ground for insects or animals that are necessary for pollination of the area's wild rice? Will secondary impacts of the mine, ie., increase in the need for housing, result in the destruction/devaluing of more acres of wetlands in the area?

Section 3: Description of the Environmental Setting:
Page 3-2: The 2nd and 3rd sentences of the 1st paragraph on this page state, "For instance, the groundwater quality study area was roughly linked to the anticipated compliance boundaries for the plant site and TMA. Since groundwater standards cannot by law be exceeded at the compliance boundary, studying groundwater quality much beyond the compliance boundary is of little value." What does the applicant mean by "of little value"? Is it not important to know what human health and environmental effects could occur if the groundwater quality beyond, not only slightly, but extensively beyond, the compliance boundary becomes contaminated? This is the EIR leading into both the state and federal EISs. This "of little value" detail is exactly what this report needs and is for the most part lacking with regard to groundwater and other major aspects of the project. The potential for contamination due to this project does not stop at compliance boundaries just because that is the law, but must be planned for in great detail and its

effects must be anticipated and weighed into any decision making process.

Section 3.1: Regional and Local Setting:
Page 3.1-1: The last paragraph needs to be expanded to include not only the Mole Lake Reservation, which is briefly mentioned, but to include the Forest County Potawatomi Reservation and to highlight more the Wolf River basin including the reliance of this basin's ecosystem by the Menominee and Stockbridge-Munsee Reservations. Four federally-recognized Indian reservations are within 25 miles of the proposed project site and this should be noted in the Regional and Local Setting as this is in large part what makes this area unique. For a project this size, potential impacts, both good and bad, will likely be felt not only in the immediate or local area, but also in the entire central/northern area of Wisconsin. This section only very briefly touches on the regional and local settlings and needs much more detail such as identifying other industry, more on the historic aspects of the area, and more detail on the tribal lands as mentioned above. See attached comments by John Haugland.

Section 3.2: Cultural Resources:
Page 3.2-1 through 3.2-26: This entire section needs to reference and incorporate the concerns highlighted in the November 8, 1995 report entitled, "The Potential Cultural Impact of the Development of the Crandon Mine on the Indian Communities of Northeastern Wisconsin" into this section and into other pertinent sections of the EIR. EPA fully supports the findings, conclusions and recommendations (Chapter 7 of the Report) of the report which was prepared by Charles Cleland, etal. EPA also encourages that the state and federal EISs fully utilize this report. Also, please refer to the attached comments by John Haugland, EPA dated July 25, 1996.

In addition, this section needs to not only analyze what potential effects the project can cause to the Tribes environmentally or physically, but also mentally. The pre-mine and actual mining can potentially have drastic effects on members of this population. Some individual tribal members have dedicated the better parts of 20 years being involved in this project, when that time should/could have been spent on other important tribal matters. As mentioned above, cumulative impacts must be considered and the EPA's document "Tribes at Risk: The Wisconsin Tribes Comparative Risk Project, Final Report 1992" needs to be reviewed and referenced as well as the CEQ draft Environmental Justice Guidance referenced above. Additionally, a video, also entitled "Tribes at Risk" produced by the Mole Lake Reservation should be referenced as it portrays the sentiment of tribal members with regard to the project and highlights potential adverse affects to the Tribe.

Also, this section needs to be updated to include other pertinent information that has been supplied by the Tribes since May 1995.

Section 3.2.1: Historical and Archaeological Studies:
Page 3.2-1: Will the applicant consider having an outside archaeologist on staff during site preparation stages to watch over for potential sites? What are the provisions of stopping/delaying work if for example, unexpected finds are discovered such as a burial ground?

Page 3.2-2: The 2nd paragraph needs to be updated to include the discharge pipeline to the Wisconsin River.

Section 3.2.2.1.2: Methodology:
Page 3.2-13: The 2nd paragraph on this page states that data and models in the 1986 FEIS and in on-going studies indicate that surface water, air, and groundwater quality will remain within accepted standards and that only groundwater drawdown may require mitigative action. These statements should not be made based on the 1986 FEIS since certain standards may be more

stringent now than they were in 1986, such as now the Mole Lake Reservation has its own water quality standards, and soon the Forest County Potawatomi may be receiving Class I air redesignation. In addition, summaries in the EIR and in the subsequent state and federal EISs, must look at what will be the effects to human health and environment not only in the "all laws will be complied with scenario", but also the accidental/unintentional/unplanned for releases that can, and have historically occurred with mining sites (see Human Health & Environmental Damage Report referred to above); so it should not be assumed that only the potential groundwater drawdown will need corrective action. In addition, the 5th sentence of this paragraph states, "In the broadest sense, this would require the examination of not only local water bodies and drainage systems, but also the entire Wolf River Drainage basin, into the Great Lakes, and beyond.", then the applicant proceeds to state how the area of potential effect will only be limited to a smaller, more local level because on these wider scales, the effects of drawdown is hardly measurable. This section is referring to mostly just the Traditional Cultural Properties studies, but EPA feels that the entire EIR is handled with similar philosophy by the applicant (looking at too narrow of areas) and recommends that the applicant's redraft of the EIR and/or the state and federal EISs take this broader view as mentioned in the 5th sentence. Positive and negative effects from the proposed mining site will most likely be felt not only in the local backyards but potentially throughout the Wolf River Basin and that is what the EIR and subsequent state and federal EISs are supposed to be determining, so the applicants should look at all regional effects that may be caused by the proposed mine. EPA's proposed surface water study will be looking at the more broader areas for environmental effects and will need the assistance of the applicant and other agencies (see attached comments from Margaret Thielke).

Page 3.2-13: In the 3rd and 4th paragraph on this page, the example used is confusing and needs to be reevaluated. The end of the 3rd paragraph states that the role of this set of TCPs must be analyzed with reference to the overall cultural landscape for this resource. The 4th paragraph then gives the example that in summary indicates that losing a resource such as a cedar grove is alright if another cedar grove of similar age, composition and size is found that would meet the needs of the people who rely on this resource culturally. Other concerns must be taken into consideration prior to any decisions being made on trade-offs of this type, such as access to this resource, i.e., within treaty lands or not, or will other industry or housing projects (secondary effects to this project) also encroach on these resources and therefore further limiting availability of this resource. For example, this EIS states that 29.9 acres of wetlands will be destroyed but 50 or so acres of wetlands will be restored elsewhere, outside of the Treaty Lands of one Reservation and into the Treaty Lands of another Reservation. The initial loss of only 29.9 acres to the first Reservation may not be that great because there are plenty of other wetlands within the area that could be used by them. But as time continues, more and more of these wetlands may be encroached upon by the new apartment buildings that will most likely need to be built to help support the 1000+ new workers of the mine, i.e,.cumulative or secondary effects, etc. So in summary, more than just finding a replacement cultural resource needs to be done by the applicant before a decision can be made as to the destruction of a cultural resource.

Section 3.3: Transportation and Utilities:
Page 3.3-1: This section needs to evaluate effects on transportation further out than the 10 miles to the east, south and west (north? - not mentioned). This section should cover all aspects of transportation in a much larger regional area. It is conceivable that workers at the mine will be residing in Rhinelander, Shawano and other cities outside of the Crandon area so road systems region-wide should be reviewed. In addition, favored truck routes for all materials entering and exiting the project site should be detailed. This section should also cross-reference where the potential human and environmental effects of transportation related activities due to the project can be found elsewhere within the EIR.

Section 3.3.1: Methods:
Page 3.3-1, 3.3-2: Taking only a traffic reading in January and then modeling peak summer-tourist traffic based on WDOT percentages is indicative of most of the data within the EIR, that is, get minimum data and then extrapolate it to get a final conclusion that does not have any real numbers to substantiate it.

Section 3.3.2: Roads:
Page 3.3-2: Will increased road traffic due to the project speed up the need for minor or major road repairs in the region? Will road improvements such as additional street signs, stop lights, street lighting, turning lanes, etc., be needed due to the increased road traffic? Who will bear this cost?

Section 3.3.4: Railroad:
Page 3.3-3: Will the mine cause the WCL to increase the number of trains per day to more than the two per day planned for 1995? Will local municipalities be burdened with the costs of improving railroad crossings, i.e, putting up crossing gates, lights, etc., at crossings presently void

of these safety devices, because of the increased rail traffic? This section needs to mention that the WCL line cuts across both the Stockbridge-Munsee and Menominee Reservations and that it parallels the Wolf River for a distance south of the project site.

Section 3.3.5: Utilities:
Page 3.3-3: Any emergency back-up utilities planned to handle long durations of power outages as mentioned in the MPA Section 4.13.14.2?

Section 3.4.2: Climatology-Meteorology:
Page 3.4-2: EPA agrees with and reiterates the comments made by John Coleman, Great Lakes Indian Fish & Wildlife Commission, dated June 28, 1996 to Chris Carlson, WDNR, regarding climate data in this section. A copy of his letter is attached. In addition, how do the wind roses for Monitoring site No. 1 compare to wind roses from the same time periods from the N. Pelican Lake Station? This would be an interesting comparison and could help show that the two locations are or are not always experiencing the same weather patterns. As Table 3.4-1 shows, that even when discounting the “equipment problem” data, the precipitation data is variable between the two locations.

Section 3.4.3.2: Prevention of Significant Deterioration:
Page 3.4-6: the last paragraph states that there are no areas designated as Class I within 100 miles of the project are so that therefore a Class I impact study is not required. Since the Forest County Potawatomi Reservation may very likely receive Class I air redesignation by the time this project is initiated, a Class I impact study needs to be conducted. COE and/or the WDNR should insist on this study being conducted.

Section 3.4.3.6: Other Emission Sources:
Page 3.4-10: Is the data from Carter 1995 the same as derived from EPA’s 1993 Toxics Release Inventory? EPA’s TRI data may be able to further determine potential cumulative effects of air emissions on the area surrounding the proposed mine.

Section 3.5: Geology & Soils:
Page 3.5-1: An additional objective for the geologic study should have been to determine the characterizations of soils/geologic layers with regard to contaminant transport at and away from

the mine site and TMA area. See additional geologic comments regarding the cross-sections in the attached comments from Jean Chruscicki, etal, dated July 30, 1996.

Section 3.5.1.2.1: Ore Body and Bedrock Drilling Programs
Page 3.5-4 through 3.5-11: Table 3.5-1: within the Table, under the "tests conducted" column, it lists "RT" meaning radiological testing, yet neither Section 3.5.1.2.1 nor do other sections in this portion of the EIR mention anything about what those tests involved or where the data is. See the attached comments from Michael Murphy for additional radiological concerns.

Section 3.5.5.3.1: Bulk Chemical Analyses:
The tables within this section, Table 3.5-15 through Table 3.5-31 are not consistently sampled/summarizing the same set of constituents, for example, some have uranium and chromium, while others do not. Is there a reason why the same parameters were not consistent throughout the study?

Section 3.5.5.3.4: Miscellaneous Studies:
Page 3.5-107, 3.5-108: Extraction Procedure (EP) Toxicity: EPA has in the past recommended that the applicant conduct TCLP testing of the tailings to further determine what the leachate may contribute to the groundwater in the way of contamination if contamination did indeed occur (i.e., knowing what to monitor groundwater for during the life of the mine). The applicant responded on April 18, 1996 stating that EPA's recommendation is not valid since tailings are exempt from 40 CFR Subtitle C regulation, including TCLP analysis and are therefore regulated as a non-hazardous material. The applicant further stated that the past EP toxicity test results would be identical to the present day TCLP results (and supplied portions of an EPA report highlighting sections stating that the two tests accomplished similar results) so why conduct the further testing. While the need to conduct the TCLP testing as a regulatory requirement is not in question, the two tests, EP Toxicity and TCLP, are not identical, in that the TCLP methods are newer and test for a broader range of constituents and more accurately addresses the leaching potential of wastes containing organic constituents. While the tailings are not anticipated to contribute organic constituents, TCLP analyzes for 25 leachable organics, so if they are present, this test will determine it. EPA is not requesting this test to determine if regulatorily this waste can be called a hazardous waste, but to determine what hazardous characteristics may eventually be associated with the backfilled mine and TMA areas due to the acidic conditions that will likely exist and knowing what to monitor for in the leachate and groundwater monitoring wells. In addition, the previous EP toxicity tests were taken in 1982; are the detection limits and machinery used now similar to the detection limits and machinery used 14 years ago? As the applicant has stated on other matters, the technology today is better than that that was available yesterday and so I believe that current methods and machinery in the labs are more sensitive today than even 5 years ago. (See attached comment from Arthur Tipton.)

Radiological Testing: See attached comments from Michael Murphy. The EIR and subsequent state and federal EISs must address whether or not potential radiological sources represent a human health or environmental hazard and not only whether or not there are economical quantities of radiological material to be mined.

Section 3.6.1.1: Historical Drilling & Monitoring Well Installation Programs:
Page 3.6.2: This section, as well as others, needs to cross reference as to where other studies and the results are found within the EIR or elsewhere. Also, more detail regarding the quality assurance/quality control need to be provided as well as more detail on the drilling and sampling procedures and objectives.

Section 3.6.1.2: Lake Bed and Wetland Drilling Studies:
Page 3.6-12: Will this section be updated to reflect the recent drilling by the state and the applicant or will those reports stand on their own? The results of the lake bed studies will be looked into more by the EPA as the EPA proceeds with their surface water study. (See attached comments from Margaret Thielke)

Section 3.6.1.3.1: Selection of Well Locations for Monitoring:
Page 3.6-16: Table 3.6-2: A figure should be provided just showing the locations of the wells proposed for groundwater quality validation and not as shown in Figure 3.6-2.

Section 3.6.2: Domestic Water Well Inventory:
Page 3.6-28: This section states that an inventory of 36 miles was conducted surrounding the proposed plant site and that the region was divided into 4 zones. A figure is needed outlining these 4 zones.

Section 3.6.2.2: Summary of Inventory Results:
Page 3.6-29 through 3.6-33: This section needs to better define all wells within a larger area (beyond Zone 1) than represented within Figure 3.6-8. All wells within the anticipated groundwater drawdown zone and an additional ring of at least a mile should be inventoried. Are there only domestic wells? Aren't there any community, industrial, irrigation wells in the anticipated drawdown zone? These must also be inventoried and the effects of drawdown must be determined.

Section 3.6.4.2: Hydrogeologic Characteristics:
Page 3.6-40: This section highlights several pump tests. Was the discharge water from these tests analyzed and where was the pump test water discharged? What was the quantity of discharge?

Please also refer to the attached comments from EPA Crandon Mine Team members, including the following: Carolyn Bury: Watersheds and Non-point Source Programs Branch, comments dated August 1, 1996; Margaret Thielke, Modeling Coordinator, comments dated July 31, 1996; Michael Murphy, Health Physicist, Air and Radiation Division, comments dated August 1, 1996; John Haugland, Regional Economist, Office of Strategic Environmental Analysis, comments dated July 25, 1996; John Morris, Chemist, Central Regional Laboratory, comments dated July 26, 1996; Arthur Tipton, Waste Management Branch, comments dated July 24, 1996; Jean Chruscicki, etal, Geologic Review Team, comments dated July 30, 1996; and the EPA's previously submitted TMA/Feasibility Comments dated February 14, 1996. In addition, the following are attached for reference: Human Health and Environmental Damages from Mining and Mineral Processing Wastes, by U.S. EPA Office of Solid Waste, July 1, 1996; and a letter from John Coleman, Great Lakes Indian Fish & Wildlife Commission to Chris Carlson, WDNR, dated June 28, 1996 regarding Climate data.

Thank you for providing EPA the opportunity to review and comment on these documents and to providing technical assistance to your agency in the EIS process. Again, the above and attached comments should be considered preliminary since the applicant has not completed all the necessary investigations or reports for the EIR. Please contact me if you need additional copies of the EPA documents referred to above or in the attached comments. If you need any clarifications on any of the above or attached comments, please give me a call at (312) 886-7252.

Sincerely,

Daniel J. Cozza
U.S. EPA, Crandon Mine Project Manager

cc: w/attachments

Bill Tans, WDNR
Dave Ballman, COE
Ron Spry, U.S. FWS
Jim Krohelski, U.S. GS
Herb Nelson, U.S. BIA
John Griffin, Mole Lake
Llewellyn Boyd, Menominee
Mark Kuester, U.S. BIA
John Koss, Menominee
Ken Fish, Menominee
Greg Bunker, Stockbridge-Munsee
John Coleman, GLIFWC
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Kathy Condon, Menominee
Steve Dodge, EPA